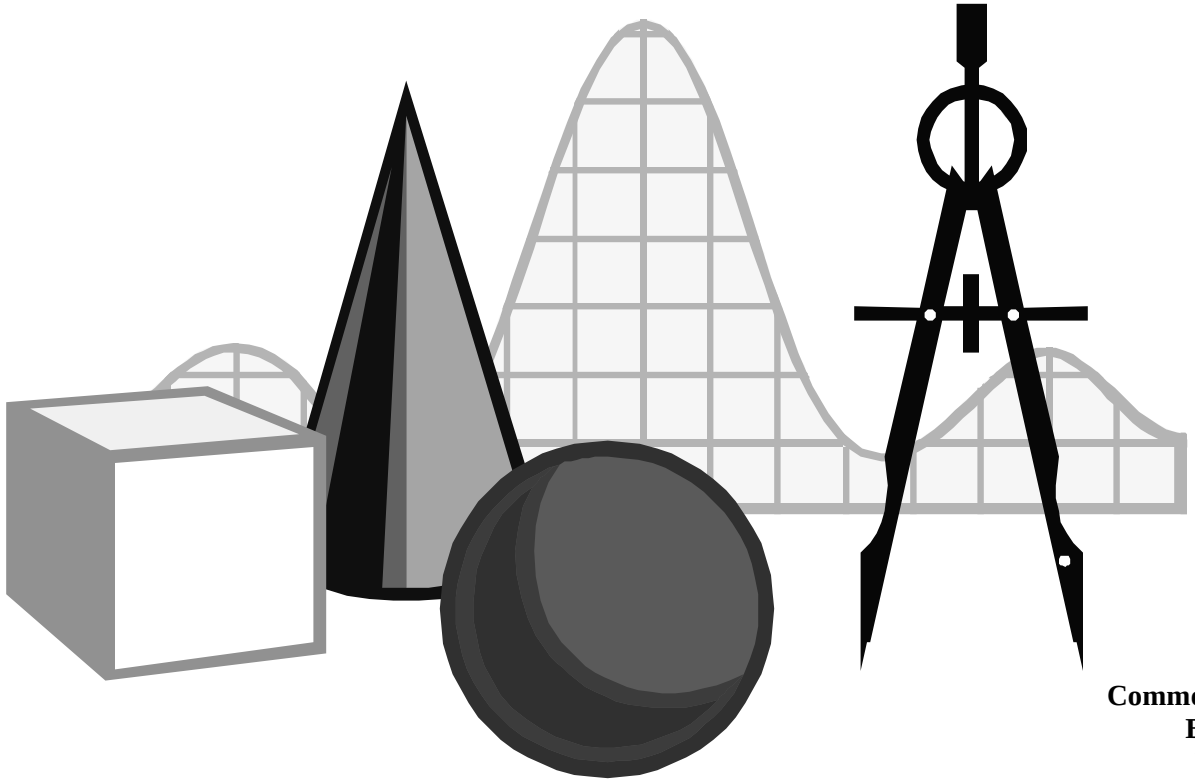
MATHEMATICS STANDARDS OF LEARNING SAMPLE SCOPE AND SEQUENCE

Grade 2



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Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

by the

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The *Mathematics Standards of Learning Sample Scope and Sequence* and the *Mathematics Standards of Learning Curriculum Framework Guide* can be found in a PDF and Word file format on the Virginia Department of Education's Web site at http://www.pen.k12.va.us.

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Preface

As an additional resource to help school divisions develop curricula aligned to the 2001 Mathematics Standards of Learning, the Virginia Department of Education has developed sample scope and sequence documents in kindergarten through grade eight and in core high school courses. These sample documents provide guidance on how the essential knowledge and skills that are identified in the Standards of Learning and the Standards of Learning Curriculum Framework may be introduced to students in a logical, sequential, and meaningful manner.

These sample scope and sequence documents are intended to serve as general guides to help teachers and curriculum developers align their curricula and instruction to support the Standards of Learning. Each sample document is organized around specific topics to help teachers present information in an organized, articulated manner. Also included are correlations to the Standards of Learning for that curricular area for a particular grade level or course, as well as ideas for classroom assessments and teaching resources.

The sample scope and sequence documents are not intended to prescribe how curriculum should be developed or how instruction should be delivered. Instead, they provide examples showing how teachers and school divisions might present to students in a logical and effective manner information that has been aligned with the Standards of Learning. School divisions that need assistance in developing curricula aligned with the Standards of Learning are encouraged to consider the sample scope and sequence guides. Teachers who use the documents should correlate the content identified in the guides with available instructional resources and develop lesson plans to support instruction.

Copies of the sample scope and sequence guides are available at http://www.pen.k12.va.us in both PDF and Microsoft Word formats.

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Introduction

The elementary school sample mathematics scope and sequence is based on the essential knowledge and skills identified in the Mathematics Standards of Learning Curriculum Framework. The sample scope and sequence is indexed by organizing topics reflective of the big ideas contained within the grade level curriculum and correlated to the Mathematics Standards of Learning. It is not intended to be a complete list of all the lessons that need to be taught and mastered during each elementary school grade, yet it sets forth a comprehensive set of instructional expectations that students should master to successfully achieve the grade level standards.

A primary purpose of this document is to offer teachers and curriculum developers one way to sequence and focus their curricula. Teachers may restructure the organizing topics into an instructional program that is inclusive, but better aligned with the available instructional resources (e.g., textbooks, supplemental resource materials, and technological support materials). Once the instructional materials for a scope and sequence are identified, teachers should give consideration to an alignment of the instructional time for each of the topics contained within an assessment reporting category or to the weight of the reporting category.

Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well. The resources section included in the sample scope and sequence document provides a list of manipulatives that may be used in the instructional lessons for the development of the concepts related to the content standards. It also includes page references to the Mathematics Curriculum Framework where instructional strategies and further information can be found for teaching the particular concepts and skills. Additionally, within the resource area, staff development resource documents produced by the Department of Education are listed and can be found on the Department of Education's Web site at www.pen.k12.va.us.

Assessments should support the learning of important mathematics and provide useful feedback to both teachers and students. The classroom assessment methods section in this sample scope and sequence lists a few types of the tests, tasks, and observations that should be used in assessing the student's progress. When teachers select assessment methods, they should ensure that all students have the opportunity to clearly and completely demonstrate what they know and are able to do. Whether the focus is on formative assessment aimed at guiding instruction, or on summative assessment of the student's knowledge, it is important that the teacher have a strong understanding of the mathematics being assessed and the skills to make valid inferences about a student's knowledge and understanding.

The content of the Mathematics Standards of Learning supports five goals for students: becoming mathematical problem solvers, communicating mathematically, reasoning mathematically, making mathematical connections, and representing mathematical ideas. These goals provide a framework for students to learn with understanding, actively building new knowledge from experience and prior knowledge. Therefore, throughout the study of mathematics, students should be encouraged to talk about mathematics, to use the language and symbols of mathematics, to discuss problems, to solve various types of problems in a variety of contexts, and to develop the competence and confidence in themselves as a mathematics student.

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

The Sample Mathematics Standards of Learning Scope and Sequence should serve as a resource tool for teachers and administrators for developing effective curricula, instruction, and classroom assessment. The degree of success that students have with the Mathematics Standards of Learning will depend upon the school division's implementation of an instructional program that is aligned with the Mathematics Standards of Learning.

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topics	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Whole Numbers: Representations & Relationships	K.1 K.2 K.3 K.4 K.5	1.1 1.2 1.3 1.4 1.5 1.7	2.1 2.2 2.3 2.5	3.1 3.2 3.3	4.1	
Whole Number Operations & Estimation: Addition and Subtraction	K.6	1.8 1.9	2.6 2.7 2.8 2.9 2.10 2.26	3.4 3.8	4.5 4.6	5.3
Whole Number Operations & Estimation: Multiplication and Division				3.4 3.9 3.10	4.7 4.8	5.3 5.5
Decimals: Representations & Relationships				3.7 3.12	4.2 4.4	5.1 5.2
Decimal Operations & Estimation: Addition and Subtraction				3.12	4.9	5.4
Decimal Operations & Estimation: Multiplication and Division						5.4 5.6
Fractions: Representations & Relationships		1.6	2.4	3.6 3.11 3.5	4.2 4.3	5.2
Fraction Operations & Estimation: Addition and Subtraction					4.9	5.7
Measurement Money	K.6 K.7	1.10	2.11	3.13		
Measurement: Length	K.8 K.10	1.12	2.12	3.14	4.11	5.11

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topics	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Measurement: Weight/Mass	K.8 K.10	1.12 1.14	2.15	3.14	4.10	5.11
Measurement: Volume (Liquid)		1.13	2.17	3.14	4.12	5.11
Measurement: Temperature	K.8 K.10		2.19	3.17		5.11
Measurement: Time	K.8 K.9	1.11	2.16 2.18	3.15 3.16		5.12
Measurement: Perimeter, Area, Volume, Circumference			2.12 2.7 2.13 2.14		4.13	5.8 5.9 5.10 5.11
Geometry: Two-Dimensional (plane)	K.11 K.12	1.16 1.17	2.22	3.18 3.19	4.14 4.15 4.16	5.13 5.14 5.15a
Geometry: Three-Dimensional (solid)			2.22 2.20	3.18	4.17a, b	5.16
Geometry: Transformations			2.21	3.20	4.17c	5.15b, c, d, e
Geometry: Spatial Relationships	K.13	1.15			4.18	
Statistics: Collect, Organize, Display, Analyze and Interpret Data	K.14 K.15	1.18 1.19	2.23	3.21 3.22	4.20	5.18 5.19
Probability	K.16		2.24	3.23	4.19	5.17
Patterns and Functions: Representations & Relationships	K.17 K.18	1.20 1.21	2.25	3.24	4.21	5.20
Algebra: Representations & Relationships			2.26	3.25	4.22	5.21 5.22

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Numbers: Representations & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, place value charts, Digi-Blocks, cubes, linking cubes, counters, 10-frames, bean sticks, color tiles, Cuisenaire Rods, number cards, calculators
	▪ Demonstrate the understanding of the ten-to-one relationships among ones, tens, and hundreds, using manipulatives (e.g., beans and cups, base-10 blocks, bundles of 10 Popsicle sticks). ▪ Determine the place value of each digit in a three-digit numeral presented as a pictorial representation (e.g., a picture of base-10 blocks) or as a physical representation (e.g., actual base-10 blocks). ▪ Write numerals, using a base-10 model or picture. ▪ Read three-digit numbers when shown a numeral, a base-10 model of the number, or a pictorial representation of the number. ▪ Identify the place value (ones, tens, hundreds) of each digit in a three-digit numeral. ▪ Round two-digit numbers to the nearest ten.	2.1		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Numbers: Representations & Relationships (cont'd)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, place value charts, Digi-Blocks, cubes, linking cubes, counters, 10-frames, bean sticks, color tiles, Cuisenaire Rods, number cards, calculators
	▪ Identify numbers that are greater than or less than a given number between 0 and 999. ▪ Compare two numbers between 0 and 999, represented pictorially or with concrete objects (e.g., base-10 blocks), using the terms *greater than, less than* or *equal to*. ▪ Compare the numerical value of two whole numbers between 0 and 999 by identifying one as greater than, less than, or equal to the other. ▪ Write the symbols for less than (<), greater than (>), and equal to (=) to compare two numbers between 0 and 999.	2.2		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Numbers: Representations & Relationships (cont'd)	▪ Count an ordered set of objects, using the ordinal number words *first* through *twentieth*. ▪ Identify the ordinal positions first through twentieth, using an ordered set of objects. ▪ Identify the ordinal positions first through twentieth, using an ordered set of objects presented in lines or rows from -left to right; -right to left; -top to bottom; and -bottom to top**.**	2.3		
	▪ Determine patterns created by counting by twos, fives, and tens on a hundred chart. ▪ Skip count by twos, fives, and tens to 100, using manipulatives, a hundred chart, mental mathematics, and/or paper and pencil. ▪ Skip count by twos, fives, and tens to 100, using the constant feature on the calculator. ▪ Count backward by tens from 100. ▪ Group objects by threes. ▪ Group objects by fours. ▪ Use objects to determine whether a number is odd or even	2.5		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Fractions: Representations and Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observation ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: Fractions circles, pie pieces, pattern blocks, Cuisenaire rods, connecting cubes, fractions strips
	▪ Recognize fractions as representing equal-size parts of a whole. ▪ Identify the fractional parts of a whole or a set for $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{10}$. ▪ Identify the fraction names for the fraction notations $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{10}$. Represent fractional parts of a whole for $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{10}$, using - region/area models (e.g., pie pieces, pattern blocks, geoboards); - sets (e.g., chips, counters, cubes); and - measurement models (e.g., fraction strips, cuisenaire rods, connecting cubes).	2.4		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations: Addition and Subtraction	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, place value charts, Digi-Blocks, cubes, linking cubes, counters, 10-frames, bean sticks, color tiles, Cuisenaire Rods, number cards, calculators
	▪ Recall and write the basic addition facts for sums to 18 or less and the corresponding subtraction facts. ▪ Recall and write the basic addition facts for sums to 18 or less and the corresponding subtraction facts, when addition or subtraction problems are presented in either horizontal or vertical written format.	2.6		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations: Addition and Subtraction (cont'd)	▪ Regroup 10 ones for 1 ten, using base-10 models, when finding the sum of two whole numbers whose sum is 99 or less. ▪ Estimate the sum of two whole numbers whose sum is 99 or less and recognize whether the estimation is reasonable. ▪ Determine the sum of two whole numbers whose sum is 99 or less, using base-10 models, such as base-10 blocks and bundles of tens. ▪ Solve problems presented vertically or horizontally that require finding the sum of two whole numbers whose sum is 99 or less, using paper and pencil. ▪ Solve problems, using mental computation strategies, involving addition of two whole numbers whose sum is 99 or less.	2.7		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations: Addition and Subtraction (cont'd)	▪ Regroup 1 ten for 10 ones, using base-10 models, such as base-10 blocks and bundles of tens. ▪ Estimate the difference of two whole numbers each 99 or less and recognize whether the estimation is reasonable. ▪ Determine the difference of two whole numbers each 99 or less, using base-10 models, such as base-10 blocks and bundles of tens. ▪ Solve problems presented vertically or horizontally that require finding the difference between two whole numbers each 99 or less, using paper and pencil. ▪ Solve problems, using mental computation strategies, involving subtraction of two whole numbers each 99 or less.	2.8		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations: Addition and Subtraction (cont'd)	▪ Identify the appropriate data and the operation needed to solve an addition or subtraction problem where the data is presented in a simple table, picture graph, or bar graph. ▪ Solve addition and subtraction problems requiring a one-step solution, using data from simple charts, picture graphs, bar graphs, and everyday-life situations. ▪ Create a one-step addition or subtraction problem using data from simple tables, picture graphs, and bar graphs. For subtraction, the difference will be between two whole numbers each 99 or less.	2.9		
	▪ Determine the missing number in a number sentence (e.g., 3 + __ = 5 or __+ 2 = 5; 5 – __ = 3 or 5 – 2 = __). ▪ Write the related facts for a given addition or subtraction fact (e.g., given 3 + 4 = 7, write 7 – 4 = 3 and 7 – 3 = 4).	2.10		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Whole Number Operations: Addition and Subtraction (cont'd)	▪ Solve problems by completing a numerical sentence involving the basic facts for addition and subtraction (e.g., 3 + __ = 7, or 9 – __ = 2). ▪ Create a story problem for a given numerical sentence.	2.26		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Money	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: money, calculators
	▪ Identify all coins and a one-dollar bill, recording the value using the cent symbol (¢), dollar ($), and/or decimal point (.). ▪ Determine the value of a collection of coins and one-dollar bills, up to a value of $2.00. ▪ Compare the amounts of two sets of coins and one-dollar bills (up to a value of $2.00 in each set), using the terms *greater than, less than,* or *equal to.* ▪ Simulate everyday opportunities to count, compare, and make change, using a collection of coins and one-dollar bills up to a value of $2.00.	2.11		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Length	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: rulers, yard sticks, meter sticks
	▪ Identify an inch as a U.S. customary unit for measuring length. ▪ Estimate and measure the length of various line segments and objects to the nearest inch. ▪ Identify a centimeter as a metric unit for measuring length. ▪ Estimate and measure the length of various line segments and objects to the nearest centimeter.	2.12		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Weight/Mass	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: balance scale, various weights
	▪ Identify a pound as the U.S. customary unit for measuring weight. ▪ Estimate and then measure the weight of familiar objects to the nearest pound, using a scale. ▪ Identify a kilogram as a metric unit for measuring mass. ▪ Estimate and then measure the mass of familiar objects to the nearest kilogram, using a scale.	2.15		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Volume (Liquid)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: spoons, scoops, plastic containers which measure cup, pint, quart, gallon, and liter
	▪ Identify the metric and U.S. customary units for measuring liquid volume (e.g., cups, pints, quarts, gallons, and liters). ▪ Compare customary and metric units of liquid volume (e.g., cups to quarts, liters to quarts), using actual measuring devices and the concepts of *more*, *less*, and *equivalent*.	2.17		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Temperature	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: thermometers
	▪ Read temperature to the nearest 10 degrees from real Celsius and Fahrenheit thermometers and from physical models (including pictorial representations) of such thermometers.	2.19		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Time	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: analog play clocks, digital clocks, calendars
	▪ Show and tell time to the quarter hour, using a model analog clock. ▪ Write the time indicated on a digital clock to the nearest quarter hour. ▪ Write the time indicated on an analog clock to the nearest quarter hour. ▪ Match a written time to a time shown on a clock face to the quarter hour.	2.16		
	▪ Read a calendar to locate a given day or date. ▪ Identify the seven days in a week. ▪ Determine the days/dates before and after a given day/date. ▪ Determine the date that is a specific number of days or weeks in the past or in the future from a given date, using a calendar. ▪ Identify specific dates (e.g., the third Monday in a given month.	2.18		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Perimeter, Area, Volume, Circumference	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: string, rulers, meter sticks, cubes, inch tiles, geo-boards, grid paper
	▪ Measure each side of a variety of concrete polygons and add them to determine the distance around the polygon (its perimeter). ▪ Determine the distance around a polygon (its perimeter), given the measurements of the sides in centimeters or inches.	2.12		
	▪ Solve problems presented vertically or horizontally that require finding the sum of two whole numbers whose sum is 99 or less, using paper and pencil. ▪ Solve problems, using mental computation strategies, involving addition of two whole numbers whose sum is 99 or less.	2.7		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Measurement: Perimeter, Area, Volume, Circumference (cont'd)	▪ Investigate covering a given surface with square units, using concrete materials (e.g., inch tiles, geoboards, grid paper). ▪ Determine the area of a given surface on grid paper by estimating and then counting the number of square units needed to cover the surface.	2.13		
	▪ Investigate the concept of volume by filling boxes and building box shapes, using cubes. ▪ Determine the volume of a rectangular box by counting the number of cubes needed to fill it. ▪ Determine the volume of a rectangular box by - counting the number of cubes in the top layer of cubes; and - adding that number for each layer of cubes.	2.14		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Two-Dimensional (plane)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: plane and solid shapes ▪ DOE Geometry for Elementary Teachers Staff Development Training Guide
	▪ Determine similarities and differences between plane and solid shapes (e.g., circle/sphere, square/cube, and rectangle/rectangular solid), using models and cutouts. ▪ Trace faces of solid shapes (e.g., cube and rectangular solid) to create the set of plane figures related to the solid shape. ▪ Compare and contrast plane and solid geometric shapes (e.g., circle/sphere, square/cube, and rectangle/rectangular solid) according to the number and shape of their faces (sides, bases), edges, and corners.	2.22		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Three-Dimensional (solid)	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: geometric solids ▪ DOE Geometry for Elementary Teachers Staff Development Training Guide
	▪ Determine similarities and differences between plane and solid shapes (e.g., circle/sphere, square/cube, and rectangle/rectangular solid), using models and cutouts. ▪ Trace faces of solid shapes (e.g., cube and rectangular solid) to create the set of plane figures related to the solid shape. ▪ Compare and contrast plane and solid geometric shapes (e.g., circle/sphere, square/cube, and rectangle/rectangular solid) according to the number and shape of their faces (sides, bases), edges, and corners.	2.22		
	▪ Compare three-dimensional (solid) shapes (i.e., cube, rectangular solid, square pyramid, sphere, cylinder, and cone) to similar objects in everyday life (e.g., a party hat is like a cone). ▪ Identify and name cubes, rectangular solids (prisms), square pyramids, spheres, cylinders, and cones by their appearance. ▪ Identify and describe cubes, rectangular solids (prisms), square pyramids, spheres, cylinders, and cones according to the number and shape of their faces (sides, bases), edges, and corners.	2.20		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Geometry: Transformations	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: patty paper, mirrors, miras, pattern blocks, wax paper, tracing paper, ruler, straight edge
	▪ Investigate symmetry, using paper folding, mirrors/miras, pattern blocks, wax paper, or tracing paper. ▪ Identify and demonstrate a line of symmetry in an object or an arrangement of objects. ▪ Draw the line(s) of symmetry — horizontal, vertical, and diagonal — in a figure. ▪ Identify and create figures that are symmetrical along a line, using various concrete materials.	2.21		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Statistics	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: objects, graph paper (centimeter, inch and half-inch) ▪ DOE Statistics and Probability for Elementary Teachers Staff Development Training Guide
	▪ Read the information presented horizontally and vertically on a simple bar or picture graph. ▪ Collect no more than 16 pieces of data to answer a given question. ▪ Organize data, using lists, tables, objects, pictorial representations, tally marks, and charts, in order to construct a graph. ▪ Represent data by constructing a simple picture or bar graph. ▪ Label the axes on a bar graph, limiting the number of categories (categorical data) to four and the increments to multiples of whole numbers (e.g., multiples of 1, 2, or 5).	2.23		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Statistics (cont'd)	▪ Label the axes on a picture graph, limiting the number of categories to four and including a key where appropriate. ▪ Interpret information from simple picture and bar graphs by writing at least one statement that covers one or both of the following: - Describe the categories of data and the data as a whole (e.g., the total number of responses). - Identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same. ▪ Select the best interpretation of a graph from a set of possible interpretations of the graph.	2.23		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Probability	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: spinners, coins, number cubes ▪ DOE Statistics and Probability for Elementary Teachers Staff Development Training Guide
	▪ Conduct probability experiments, using multicolored spinners, colored tiles, or number cubes. ▪ Record the results of probability experiments, using tables, charts, and tally marks. ▪ Interpret the results of probability experiments (e.g., the two-colored spinner landed on red 5 out of 10 times). ▪ Predict which of two events is more likely to occur if an experiment is repeated.	2.24		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Patterns and Functions: Representation & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: hundreds chart, geometric shapes, pattern blocks, objects ▪ DOE Patterns, Functions and Algebra for Elementary Teachers Staff Development Guide
	▪ Identify a growing and/or repeating pattern from a given geometric or numeric sequence. ▪ Predict the next number, geometric figure, symbol, or object in a given pattern. ▪ Extend a given pattern, using numbers, geometric figures, symbols, or objects. ▪ Create a new pattern, using numbers, geometric figures, symbols, or objects. ▪ Recognize the same pattern in different manifestations.	2.25		

Grade 2 Mathematics Standards of Learning Sample Scope and Sequence

Organizing Topic	Essential Knowledge and Skills	Related SOL	Sample Classroom Assessment Methods	Sample Resources
Algebra: Representations & Relationships	**The student will use problem solving, mathematical communication, mathematical reasoning, connections and representations to:**		▪ Classroom Observations ▪ Teacher Interviews ▪ Student Demonstrations ▪ Quizzes and Tests	▪ Manipulatives: base-10 materials, place value charts, Digi-Blocks, cubes, linking cubes, counters, 10-frames, bean sticks, color tiles, Cuisenaire Rods, number cards, calculators
	▪ Solve problems by completing a numerical sentence involving the basic facts for addition and subtraction (e.g., 3 + __ = 7, or 9 – __ = 2). ▪ Create a story problem for a given numerical sentence.	2.26		